



6th Assignment:

Applied Networking Lab WS 23/24

Question : (6 + 5 =11 Points): Mininet by SDN Networking

Objective:

The mininet in a Software-Defined Networking (SDN) lab is to provide a platform for emulating and testing SDN environments in a controlled and scalable manner. Mininet allows users to create virtual networks on a single machine, enabling network developers, researchers, and students to experiment with SDN concepts, test network applications, and simulate various network scenarios.

Question 1: (6 Points):

The following commands are used in mininet simulator environment to extract some information from the built-in topologies. You have to run the topology of your choice and find the result for the following methods. Support your answer with screen shots.

1. Topo
2. nodes
3. help
4. open the terminal of node 2 through Xterm
5. Node name ifconfig
6. To find Controller IP address (write command)
7. pingAll
8. stop
9. dump
10. sudo mn --test pingall
11. sudo mn --test pingpair
12. Ping node 1 from node 2
13. s1 ping 8.8.8.8 (what will be the result of this)
14. c0 ping -c 2 8.8.4.4
15. net

Question 2: (5 Points) Support your answer by Commands and screen shots

1. Topology Creation:

Create a simple linear topology with three switches and 10 hosts and one controller. Provide the Mininet command for this.

2. Node Information:

How can you view the list of all nodes (switches and hosts and controller) in your current Mininet topology?

3. Link Information:

What command would you use to display information about the links between nodes in the Mininet topology?

4. Ping Test:

Perform a ping test between two hosts in your topology. Provide the Mininet command to initiate the ping.

5. Interactive Mode:

Launch Mininet in interactive mode and add a switch with the name "s1" and two hosts with names "h1" and "h2." Use the interactive commands.

6. Stopping Topology:

What command would you use to stop and clean up the current Mininet topology?

7. Custom Topology:

Create a custom topology with a tree-like structure having a depth of 2 and a fanout of 3. Specify the Mininet command to achieve this.

8. Node Shell Access:

How can you access the shell of a specific host in your Mininet topology?

9. Bandwidth Limitation:

Limit the bandwidth between two switches to 2 Mbps. Provide the Mininet command for this.

10. Topology Visualization:

Use the net command to visualize the current Mininet topology. Explain what information is displayed in the visualization.

Due Date: February, 4th, 2024, 10:00 am

Upload all relevant files (answers to theoretical questions as either PDF or .txt plus, .pkt, GNS-3 config files, etc.) to ISIS:

<https://isis.tu-berlin.de/course/view.php?id=35211>

Put the names and Student ID numbers (Matrikelnummer) of **all** your group members on your solution!